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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,408	05/31/2001	Izhak Baharav	10003977-1	9280

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AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

EXAMINER

WU, JINGGE

ART UNIT PAPER NUMBER

2623

DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/871,408	<b>Applicant(s)</b> BAHARAV ET AL.	
	<b>Examiner</b> Jingge Wu	<b>Art Unit</b> 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment***

Applicants' response to the last Office Action, filed August 12, 2002 has been entered and made of record.

***Remarks***

Applicant's arguments with respect to claims 1-33 have been fully considered, but they are not persuasive.

a. Applicant argues (regarding to arguments A, C, and D) that Herley does not disclose "demosaicing operator incorporating a frequency-based transformation operator to take into account a subsequent frequency-based compression process", and Herley merely sets forth the desired effect of color interpolation, which can be achieved by the compression, as set forth and asserted by Herley, the mention of "DCT coefficient" in the reference passage of Herley does not relate to a demosaiing or interpolating process..."

Examiner respectfully disagrees. In response to applicant's argument, Examiner would like to point out that claim language is given its broadest reasonable interpretation. First, demosaiing is equivalent to the color interpolation disclosed in Herley, which is one method of demosaiing method (see, also in the specification of the instant application (page 2 lines 8-19). In addition, Herley expressly mentions the requirement of interpolation (demosaiing), "DCT coefficients of the image should equal quantizer reconstruction levels." and "...will settle for approximately satisfying the first" (i.e. DCT coefficients requirement) (col. 5 lines 1-11). This teaching is read on the claimed language because the color interpolation (demosaiing) of Herley must satisfy the DCT coefficient requirement or the DCT (frequency-based transform) is

incorporated in the color interpolation process , thus, inherently, incorporated a DCT operator to **take into account** a subsequent frequency based compression process. (emphasis by the Examiner). Finally, regarding how the Applicant's "frequency-based transformation operator", it is a "compression-considered demosaicing matrix" which defines the constraints of color interpolation, which is similar to the Herley's DCT coefficients requirement.

Therefore, Herley clearly discloses all limitations of broadly claimed language.

b. Applicant further argues (regarding to argument B) that color transform is performed after demosaicing an image in Herley, thus, Herley does not includes a demosaicing operator includes a color space conversion operator.

Examiner respectively disagrees. There is no where Applicant, himself, discloses that demosaicing and color space converting perform in same time. Thus, color conversion first, and then demosaicing can be certainly be viewed as a one includes another. "Include" is a set concept (only one is in or out of a group) and there is no which one first or second relationship claimed.

Therefore, Herley clearly teach the limitation of "includes a color space conversion operator".

c. Applicant still further argues (regarding to argument F) the Applicant believe the the office Action has assumed that Bayesian rule is Bayer pattern but Bayesian rule is related to probabilistic distributions and is not related to a Bayer pattern.

Examiner has taken an official notice on this feature that Bayesian rule (conditional probability distribution) is well known in the art. If Applicant challenges the notice, Examiner will produce a reference to prove.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 9, 11-16, 23-26, 30, 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5838818 to Herley (a reference of PTO-1449).

As to claim 1, Herley discloses a method of demosaicing a mosaiced image comprising:

receiving said mosaiced image, said mosaiced image being representation of a scene of interest (fig. 6, 610 and 620, col. 1 lines 11-15, and col. 5 lines 49-50, note that the scene of interest is inherent because of digital camera); and

processing said mosaiced image using a demosaicing operator on blocks of said mosaiced image to derive a representation of demosaiced image (col. 3 line 66- col. 4 line 37), said demosaicing operator incorporating a frequency based transformation (DCT) operator to take into account a subsequent frequency-based compression process (col. 4 line 65-col. 5 line 30, see remark above).

As to claims 2-3, Harley further discloses the demosaicing operator uses a color space operator for converting an original color space RGB to a different color space (YCrCb) (col. 3 lines 9-10 and line 49).

As claim 9, Harley further discloses DCT transformation (col. 3 line 42).

As to claims 11-12, Harley further discloses the representation of said demosaiced image includes a plurality of image pixel values (fig. 3) and a plurality of transformed coefficients matrices (col. 4 lines 2-38, col. 5 lines 3-30, note that DCT transform is inherently used matrices).

As to claim 13, Harley discloses limitations of receiving mosaiced image and demosaicing the image (see discussion in claim 1) and compressing the representation of the demosaiced image using a frequency-based compression scheme (JPEQ) (fig. 5-6 col. 5 lines 31-62).

As to claims 14-15, the discussions are addressed with regard to claims 2-3.

As to claims 16 and 23, the discussions are addressed with regard to claims 11-12.

As to claim 21, the discussions are addressed with regard to claim 9.

As to claims 24-26, 30, 32-33, the claims are corresponding apparatus claims to claims 1-3, 9, 11-12.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 8, 19, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harley in view of US 6731794 to Zhang et al.

As to claims 6, 8, 19, and 28, Harley does not mention the demosaicing operator is derived by defining the transformation-related coefficients as having a predefined probability distribution such as normal distribution.

Zhang, in an analogous environment, discloses that the demosaicing operator is derived by defining the transformation-related coefficients as having a predefined probability distribution such as normal distribution (col. 6 lines 8-27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Zhang in the method of Harley in order to reduce the artifacts in the demosaiced image (Zhang, col. 2 lines 27-50).

Claims 4-5, 7, 10, 17-18, 20, 22, 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harley in view of WO 01/26359 to Tao (a reference of PTO 1449).

As to claims 4-5 and 17-18, Harley does not explicitly mention the demosaicing operator being derived by defining selected coefficients of transform-related as being equal to zero and having higher frequency than remaining coefficients.

Tao, in an analogous environment, discloses the feature (page 11, lines 6-10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Tao in the method of Harley in order to obtain efficient compression and reduce the artifacts (page 2 line 5-10 and page 11, line 10).

As to claims 10, 22, and 31, Tao further discloses wavelet transform (abstract).

As to claims 7 and 20, Harley does not mention Bayesian rule to derive the operator.

Examiner takes Official Notice that the feature is notoriously well known in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the scheme of Bayesian rule in the method of Harley in order to obtain efficient compression and reduce the artifacts (page 2 line 5-10 and page 11, line 10).

As to claim 29, Harley does not mention embodied IC for demosaicing and compressing.

Examiner takes Official Notice that the feature is notoriously well known in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the special embodied IC in the apparatus of Harley in order to obtain efficient computation so as to increase the speed of processing.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.



**Contact Information**

Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally be reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (703) 306-0377.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 872-9314.

**Jingge Wu**

**Primary Patent Examiner**

